

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF PENNSYLVANIA**

FEDERAL TRADE COMMISSION,)
)
)
Plaintiff,)
)
) 2:16-cv-01669-NBF
v.)
)
) Senior District Judge Nora Barry Fischer
INNOVATIVE DESIGNS, INC.,)
)
)
Defendant.)

MEMORANDUM OPINION

I. INTRODUCTION

This is an action under the Federal Trade Commission Act (“FTC Act”), [15 U.S.C. § 53\(b\)](#), in which the Plaintiff Federal Trade Commission (“FTC”) contends that Defendant Innovative Designs, Inc. (“IDI”) violated Section 5 of the FTC Act, [15 U.S.C. § 45\(a\)](#). (Docket No. 1 ¶ 1). On July 29, 2019, this Court began what was to be a five-day bench trial. (Docket Nos. 168; 187). But after the FTC rested on the second day of the trial, IDI moved to exclude or strike the R-value opinion of the FTC’s only testifying expert, Dr. David Yarbrough. (Docket Nos. 196; 202 at 7-8). To afford the parties ample opportunity to address the issues, the Court stopped the trial, took the matter under advisement, ordered an expedited transcript, permitted supplemental briefing, and set the matter for argument. (Docket Nos. 197; 202 at 16-17). Additionally, because the FTC argued that the issues IDI raised in its oral motion to strike were addressed in Dr. Yarborough’s rebuttal deposition, this Court ordered production of same and requested copies of every scientific source Dr. Yarborough relied on in forming his expert opinion. (Docket Nos. 198-200; 202 at 22; 203-04).

Thereafter, IDI filed a written motion to strike and supporting brief, (Dockets No. 207; 208); the FTC responded, (Docket No. 209); IDI replied, (Docket Nos. 210; 211); and the FTC

filed a surreply, (Docket No. 212). Per the Court's Order, the FTC also filed Dr. Yarborough's rebuttal deposition along with his rebuttal report, a Supplement to the Table of Authorities to the Expert Reports of Dr. Yarborough, and copies of the academic articles that shaped his expert opinion. (Docket Nos. 200; 203-04; 206). Oral Argument was held on October 29, 2019.¹ (Docket Nos. 215; 217). The matter is now ripe for disposition. The Court having considered the parties' positions and evaluated the evidence in light of the applicable standard,² grants IDI's Motion to Strike for the reasons that follow.

II. RELEVANT BACKGROUND

This case centers on IDI's advertising, promotion, offering for sale and resale, and the actual sale of Insultex House Wrap ("Insultex"), a cellular/ polyethylene plastic house wrap. (Docket Nos. 1 ¶¶ 29-33; 201 at 39, 138). The FTC contends that IDI deceived its customers when it represented that its 1 mm product had an R-value of 3, that its 1.5 mm product had an R-value of 6, and that using Insultex would lead to energy savings. (Docket Nos. 1; 171; 209). An insulation product's R-value is the numeric measure of that product's ability to restrict heat flow and, thus, to reduce energy costs — the higher the R-value, the better the product's insulating ability.³ (*Pretrial Stipulations*, Docket No. 127 ¶ 9).

¹ A transcript of same was prepared and filed of record on January 10, 2020. (Docket No. 217).

² "In a bench trial, it is the province of the judge sitting as the trier-of-fact to evaluate the credibility of witnesses and weigh the evidence." *Wesley v. Grigorievna*, Civ. Act. No. 16-1004, 2016 WL 4493691, at *8 n.8 (W.D. Pa. Aug. 26, 2016) (citing *Brisbin v. Superior Valve Co.*, 398 F.3d 279, 288 (3d Cir. 2005)).

³ During the trial, Dr. Yarborough described R-value four different ways. (Docket No. 201 at 49, 53, 67-68). He first testified that the "R-value of material is often identified as the thickness in inches divided by the apparent thermal conductivity." (*Id.* at 49). Next, he defined R-value as "temperature difference divided by the heat flux, where the temperature difference is the temperature difference across the specimen and Q is the heat flux across the specimen." (*Id.* at 53). Third, he characterized it as thickness divided by conductivity. (*Id.* at 67). Fourth, and finally, he testified R-value is "directly proportional to the thickness in any normal kind of conditions. For example, if you double the thickness, you would double the R-value." (*Id.* at 68). His final description is particularly noteworthy given the R-value representations IDI makes about its product. IDI markets Insultex as having an R-value that doubles despite its thickness only increasing by one and a half times. Said another way, the 1 mm product is advertised as having an R-value of 3 and the 1.5 mm product is advertised as having an R-value of 6. (Docket Nos. 1; 171; 209). Perhaps, this is what Dr. Yarborough meant when he described Insultex as "unusual"? (Docket No. 201 at 109).

At trial, the FTC called Dr. Yarbrough to testify that IDI's R-value claims were false and that Insultex's R-value (regardless of thickness) was negligible at best.⁴ (Docket No. 201 at 6-7, 38, 110-11). In forming his opinion, Dr. Yarborough relied on C518 testing conducted by R&D Services ("R&D").⁵ (*Id.* at 39-42, 93). While Carla King, a laboratory technician with 12-15 years of experience,⁶ ran the testing, Dr. Yarborough "supervised."⁷ (*Id.*) Before delving into the parameters of each test, Dr. Yarborough prefaced his testimony by explaining that some tests were "a modification, to some extent, of the parameters listed in C518 as a standard test method" and that he understood that the modifications would be central to this case. (*Id.* at 73, 94). Not surprisingly, the issue before the Court is whether Dr. Yarbrough's expert opinion relating to the R-value of Insultex meets the reliability and fit prongs of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993).⁸

Laboratories are expected to comply with the R-value Rule, 16 C.F.R. § 460, when testing insulation and can do so if they comply with the Standard Test Method for Steady-State Thermal

⁴ The parties do not dispute Dr. Yarborough's credentials. Hence, it has been agreed that he is an expert in heat transfer, insulation technology, material testing, thermal insulation material testing, mathematics, physics, chemistry, and chemical engineering. (Docket No. 186). He received his Ph.D. in engineering from the Georgia Institute of Technology and is the Vice President of R&D Services. (Docket No. 201 at 24, 28). He is an active member of the American Society for Testing and Materials and a member of the Committee C16 involving thermal insulations that writes the testing methods. (*Id.* at 28, 33). IDI retained Dr. Yarborough in order to verify BRC Laboratories' results prior to marketing Insultex and sought to disqualify him once he was designated by the FTC. (Docket Nos. 93 at 18; 201 at 28, 33, 171-72). When ruling on IDI's motion to disqualify, this Court noted Dr. Yarborough's qualifications. (Docket No. 93 at 3). Ultimately, this Court denied said motion finding that Dr. Yarbrough's prior testing of Insultex and his relationship with IDI was not a basis for disqualification but rather was a credibility factor that the Court would consider when assessing the veracity of his testimony during the bench trial. (*Id.* at 18).

⁵ Dr. Yarbrough also reviewed testing results from BRC Laboratories secured by IDI and Lasercomp/ TA Instruments secured by the FTC. (Docket No. 201 at 42-43, 111). Lasercomp is the manufacturer of R&D's heat flow meter, and TA Instruments owns Lasercomp. (*Id.* at 111).

⁶ The trial record is devoid of evidence about Ms. King's background such as her familiarity with C518 testing methodology and the C518 Standards, her understanding of how the C518 apparatus works, and what, if any, knowledge she has about the heat transfer principles that are central to this case.

⁷ R&D is an accredited lab. (*Id.* at 84, 138-40). Although the tests were controlled by a computer, Dr. Yarbrough provided little testimony relating to the software outside of the fact that it was provided by the manufacturer of the heat flow meter, Lasercomp; nor did he opine on the reliability of the testing apparatus itself. (*Id.* at 41-42, 71-72, 111, 173).

⁸ As noted, the parties do not dispute that Dr. Yarborough is qualified.

Transmission Properties by Means of the Heat Flow Meter Apparatus (“C518 Standards”), which is incorporated by reference into the R-value Rule. [16 C.F.R. § 460.5\(e\)\(1\)\(ii\)](#); (Docket No. 201 at 33, 79). The R-value Rule and the C518 Standards exist “to provide some standardization for commerce so that . . . [laboratories] can compare results and make evaluations on a consistent basis.” (Docket No. 201 at 33). Here, in accordance with the R-value Rule, Dr. Yarborough proceeded to utilize C518 testing of which he professes to have a great familiarity.⁹ (*Id.* at 58-63; FTC Ex. 1-7; J213).

Pursuant to the C518 Standards, before doing any testing, laboratories must calibrate the C518 apparatus. (J1 § 1.2; J2 § 1.2). This is because C518 can only provide “a rapid means of determining the steady-state thermal transmission properties of thermal insulations and other materials *with a high level of accuracy* when the apparatus *has been calibrated appropriately*.” (J1 § 4.1; J2 § 4.1) (emphasis added). To calibrate the apparatus, laboratories are to use “similar types of materials, of similar *thermal conductances*, at similar *thicknesses*, mean temperatures, and temperature gradients, as . . . the test specimens.” (*Id.*) (emphasis added).

As to testing procedures, the C518 Standards require that a test specimen consist of “[o]ne- or two-piece specimens” but “[w]here two pieces are used, they shall be selected from the same material . . . essentially identical in construction, thickness, and density.” (J1 § 7.2.1; J2 § 7.2.1). In addition, the R-value Rule separately requires that the temperature difference between the plates be 50°F plus or minus 10°F during testing. (Docket No. 201 at 80; J130 § 460.5). Finally, the C518 Standards caution that “[t]he use of a heat flow meter apparatus when there are thermal

⁹ Dr. Yarbrough explained that R&D had performed these same tests on other thin specimens. (*Id.* at 72). He made no comment, however, as to whether this methodology had previously yielded accurate results. *See (id.)* Further, he failed to explain what qualified as a “thin” material or how the properties of Insultex compared to other thin materials. (*Id.* at 72-73). Elsewhere, he testified that R&D occasionally tested coatings and had tested a material as small as an eighth of an inch thick. (*Id.* at 43). Insultex is much thinner than that.

bridges present in the specimen may yield very unreliable results. If the thermal bridge is present and parallel to the heat flow the results obtained may well have no meaning.” (J1 § 4.4; J2 § 4.4).

With this understanding, the Court turns to Dr. Yarborough’s testimony at trial. After calibrating the C518 testing apparatus using a one-inch fiberglass board, King conducted nine tests using three techniques: a single layer, stacking (i.e., multiple layers), and a sandwich configuration (i.e., where a piece of material is placed between two pieces of a material with a known thermal resistance). (Docket No. 201 at 72-73, 94, 154). For each test, the Court recites only the facts that IDI contends render that test invalid. Test 1 was conducted using a 6°F temperature differential. (*Id.* at 98-99). Test 2 was conducted using a temperature differential of 18°F with a mean temperature of 75°F. (*Id.*; J212 at 13). Tests 3, 4, 5, and 6 involved stacking. (Docket No. 201 at 102-08). Specifically, Test 3 involved stacking 25 layers, Test 4 stacking 35 layers, Test 5 stacking 15 layers, and Test 6 stacking 25 layers. (*Id.* at 102-03). Tests 7 and 8 were performed using the sandwich method. (*Id.* at 108). Test 9 was conducted with two layers of a cellular plastic other than Insultex. (J212 at 12). After the tests were completed, Dr. Yarbrough reviewed the data looking for any outliers and to determine the consistency of the testing. (Docket No. 201 at 101). Based on the results, he concluded that Insultex’s R-value claims were false. (*Id.* at 101-02).

Dr. Yarborough then calculated whether IDI’s claims were even theoretically possible. (*Id.* at 112-22). He testified that for Insultex to have such a high R-value it would need to be a “very high level [superinsulation]”¹⁰ and be either a vacuum-based product or a product containing a low thermal conductivity gas. (*Id.* at 115-22). After examining Insultex’s structure, Dr. Yarbrough determined that neither was possible. (*Id.* at 116-117, 121-23). Further, Dr. Yarborough opined that thermal bridging would prevent Insultex from qualifying as a “super duper evacuating

¹⁰ A superinsulation is “a material that has a thermal resistivity of 25 or greater, R-value per inch of thickness of 25 or greater.” (*Id.* at 113).

system.” (*Id.* at 117). He, therefore, concluded that IDI’s claims were not even theoretically possible. (*Id.* at 122).

On cross-examination, IDI challenged R&D’s calibration and testing methodology. (*Id.* at 135-73). In response, Dr. Yarborough’s testimony revealed the following. R&D did a formal calibration when it first received the device and thereafter performed monthly “checks.” (*Id.* at 81). R&D calibrated its device using a fiberglass board that was a standard material from a calibration lab. (*Id.* at 87). When asked whether a one-inch fiberglass board (a high-density plastic) was appropriate for calibration given the thickness and thermal properties of Insultex, Dr. Yarborough responded that it was. (*Id.* at 154-55). While he acknowledged that there was language in the C518 Standards requiring laboratories to use “like” material, he asserted that the language was “fuzzy” and that all that was required was for the calibrating material to have the same thickness as the testing specimen. (*Id.* at 88-89, 153-55). He then explained that:

if you are going to measure materials with a low thermal resistance, then perhaps you use a one[-]inch thick standard reference material. If you are going to make measurements at ten inches of thickness, then you’ve got to use standard reference material stacked up to get something close to ten inches because it’s correcting for edge losses as well as the design of the [heat flow transducer].

(*Id.* at 89). Dr. Yarborough concluded that the difference in thickness did not impair proper calibration of R&D’s C518 testing apparatus as there was no risk of edge loss with Insultex. (*Id.* at 187). He clarified:

So I would argue that the calibration is quite satisfactory for what we did for test No. 1 and 2. For test No. 3, 4, 5, 6, we now have a thick material with larger edge losses, but the amount of thermal resistance is still about the same magnitude between the Insultex and the calibration boards when we stacked them up, so the key point is to have the same resistance in the direction toward the edges. *Not necessarily that they have the identical material, so it’s a matter of reading this stuff and having an understanding of what the intent is.*

(*Id.* at 188) (emphasis added).

Dr. Yarborough was also questioned why R&D deviated from the testing parameters set forth in the C518 Standards. (*Id.* at 109). He responded that the modifications were necessary because Insultex is an “unusual specimen.”¹¹ (*Id.*) He, however, maintained that the changes in parameters had little effect on the results and generally stated that the testing conformed to basic heat transfer principles. (*Id.* at 130). While Dr. Yarborough also agreed that the C518 Standards require a temperature differential of not less than 18°F, he asserted his modification would only affect the precision of the measurement of the first test.¹² (*Id.* at 146-48). Dr. Yarborough agreed that the second test was not within the parameters of the R-value Rule. (*Id.* at 147-49).

As to Tests 3-6, Dr. Yarborough acknowledged that stacking more than two pieces of material did not comply with the black letter language of the C518 Standards. (*Id.* at 149-50). He did, however, note that Lasercomp also used the stacking method. (*Id.* at 106-07, 111-12). He went on to explain that said methodology is premised on the principle that R-values are additive.¹³ (*Id.*) Because the stacked specimen was attuned to the calibration point, Dr. Yarborough did not “*think* [the modification] ha[d] any impact on precision.” (*Id.* at 109-10) (emphasis added). As to the final two Insultex tests, Dr. Yarborough agreed that both deviated from the C518 Standards. (*Id.* at 150). Again, he repeated that because of the additive principles of insulation, tests like the sandwich method could be used to derive the R-value of Insultex. (*Id.* at 108).

As to any argument about the possibility that Insultex’s thermal bridges might yield unreliable results because the testing was conducted with the bridges parallel to the direction of

¹¹ Dr. Yarborough also testified that the C518 Standards permit modifications. (*Id.* at 143).

¹² He testified that changing the temperature differential added at most a 0.33% increase in error. (*Id.* at 97-98).

¹³ He cited TA Instruments’ technical bulletin for this principle as well. (Docket No. 201 at 106; J298). Dr. Yarborough’s R-value equation is different from that found in the technical bulletin. Although Dr. Yarborough wrote out a number of equations as part of his testimony on direct examination, his demonstratives do not show that these were, in fact, the same equations used in the technical bulletin. Nor do they confirm that the R-value is additive. (FTC Ex. 1-7; J 198; J212).

heat flow, Dr. Yarbrough responded that Insultex's structure negated that risk entirely.¹⁴ (*Id.* at 152-53, 185). Finally, despite acknowledging that Insultex contained evacuated cells that are essentially vacuums and IDI's claims would place Insultex in the category of a superinsulation, he determined that IDI's claims were not even theoretically possible. (*Id.* at 134-38, 138, 151).

Dr. Yarborough also reviewed and commented on the testing performed at BRC Laboratories ("BRC"). (*Id.* at 158-70). He concluded that BRC's R-value results were conflated because BRC had not accounted for the ¾ inch air space or the emissivity of the metal plates. (*Id.* at 158-61, 183). However, in that same breath, Dr. Yarborough acknowledged that he did not know to what extent either played a role in the results as he had not done the math to make that determination; he simply estimated the values given that BRC's apparatus was made of stainless steel. (*Id.* at 169-70, 175). While Dr. Yarbrough opined that BRC's test results were false and unsubstantiated, he nevertheless admitted that BRC is an accredited lab and that Perry Johnson Laboratory Accreditation, Inc.¹⁵ stood behind its accreditation. (*Id.* at 139-42, 157-58, 165). He also agreed that BRC's testing apparatus and testing comported with the C518 Standards and that the testing apparatus BRC used was similar to R&D's. (*Id.* at 165, 173).

Included as part of the trial record is Dr. Yarborough's initial report. (J212). Consistent with his trial testimony, Dr. Yarborough wrote that R&D's C518 apparatus was calibrated using SRM 1450b (a fiberglass board) and was recalibrated on a monthly schedule. (*Id.* at 11). His

¹⁴ "Thermal bridging means a material that has high conductivity or low resistance compared to its surroundings." (Docket No. 201 at 184). When confronted with J2 § 4.4 of the C518 Standards, Dr. Yarborough acknowledged that the C518 Standards caution that "[t]he use of a heat flow meter apparatus when there are thermal bridges present in the specimen may yield very unreliable results" if the thermal bridging runs "parallel to heat flow" and that Insultex has thermal bridging that runs parallel to heat flow. (*Id.* at 152-53). On redirect, Dr. Yarborough clarified that under ordinary circumstances thermal bridging would have been an issue, but this was not the case with Insultex because its thermal bridges are distributed as a result of the volume of cells it contains. (*Id.* at 117, 184-85). Thermal bridging is only a risk where there is a risk of one massive thermal bridge. (*Id.*)

¹⁵ Perry Johnson accredited BRC to test insulation, construction wraps, and barriers using both ASTM C518 and ASTM C518 Modified. (J14). As Dr. Yarborough testified, accreditation lends credibility to a laboratory's results. (Docket No. 201 at 84).

report concerning the methodology of the nine tests R&D employed largely parrots his trial testimony, but at times, the report is more specific. (*Id.* at 12-13). For example, Dr. Yarborough wrote that R&D's stacking of Insultex created a specimen that was now consistent with § 1.8 of the C518 Standards and eliminated any risk of contact resistance. (*Id.*) Additionally, he opined that the sandwich method was appropriate as it is easy to separate the R-values of different materials. (*Id.*) It bears mentioning that he does not explain where the formula he used to calculate R-value is derived from, whether it is generally accepted, and how there is essentially a one-to-one R-value ratio when stacking if there is a coefficient for contact resistance included as part of the equation.¹⁶ (*Id.* at 14). As he did when testifying at trial, Dr. Yarborough concluded that IDI's claims were not even theoretically possible as there was no indication that its product contained a low thermal conductivity gas or had a vacuum. (*Id.* at 22-23). Likewise, he supposed that even if Insultex contained a low thermal conductivity gas or had a vacuum, Insultex's design would prevent the purported R-value from being maintained for more than a few days.¹⁷ (*Id.* at 23).

Dr. Yarborough also devoted a great deal of his written report to criticizing the testing performed by BRC for IDI. (*Id.* at 16-21). He found eight points of error. (*Id.* at 18-19). First, BRC's apparatus was not properly calibrated. (*Id.* at 20-21). To this end, a standard reference material was not used for calibration and calibration was not performed using a material with similar "thermal characteristics and thicknesses as the material[] to be evaluated." (*Id.* at 20) (emphasis in report). Second, BRC's heat flow meter was not calibrated by an accredited institution. (*Id.*) Third, BRC did not account for the ¾ inch air gaps. (*Id.* at 17, 20). Fourth, the

¹⁶ He does note that his results were consistent with those of Lasercomp. (Docket No. 201). However, he does not explain which tests Lasercomp ran, what methods or procedures were used, whether or not they were the same as R&D's, and what thermal principles were applied. (*Id.* at 15).

¹⁷ At trial, he testified that Insultex's structure would not appear to support a vacuum and even assuming there was a vacuum, it would decay in a few weeks. (*Id.* at 117, 118-19).

selection of the heat flow transducer was fatal given the low voltages seen during the testing. (*Id.* at 20). Fifth, there was nothing to suggest that steady-state conditions were achieved during BRC's testing. (*Id.* at 20). Sixth, using off-the-shelf commercial material for calibration is not acceptable. (*Id.* at 21). Seventh, calibrating by using a material with a time-dependent R-value is not acceptable. (*Id.*) And, eighth, the hot and cold plates were metallic and not high emittance. (*Id.*)

Because the FTC argued that the *Daubert* issues IDI raised were addressed in Dr. Yarborough's rebuttal deposition, in addressing IDI's pending motion, the Court also reviewed same along with his rebuttal report and each of the academic articles the FTC supplied.¹⁸ (Docket Nos. 198-200; 203-04). While much of his rebuttal repeated what has already been described above, the Court summarizes the new material contained therein. (*Id.*) Concerning the C518 Standards, Dr. Yarborough wrote,

A heat-flow meter operated in strict compliance with ASTM C518 is expected to produce results with imprecision of better than 3% at the 95% confidence level. . . . A heat-flow meter can provide results for situations where all the strict requirements of the standard are not met[sic]. In such cases, the imprecision is likely to be greater than the 3% mentioned above. In these cases, Section 1.9¹⁹ becomes important, professional judgment and evaluation become vital.

(Docket No. 200-4 at 3). He continued, "calibration is fundamental to measurements using a heat flow meter apparatus . . . because the data obtained from heat flow meters are electrical in nature."

(*Id.*)

¹⁸ His rebuttal report was prepared in response to the reports and depositions of Dr. Donald V. Garlotta, Dr. Anastassios Mavrokefalos, and Scott Baumann. (Docket No. 200-4). Dr. Garlotta has not yet testified and Dr. Mavrokefalos was withdrawn as an expert; only his deposition designations are part of the record. (Docket No. 187).

¹⁹ This section provides,

It is not practical in a test method of this type to try to establish details of construction and procedures to cover all contingencies that might offer difficulties to a person without pertinent technical knowledge. Thus[,] users of this test method shall have sufficient knowledge to satisfactorily fulfill their needs. For example, knowledge of heat transfer principles, low level electrical measurements, and general test procedures is required.

(J1 § 1.9).

When looking at the theoretical possibility of Insultex's stated R-values, Dr. Yarborough reiterated that while there are isolated regions of reduced pressure in Insultex, the structure of Insultex, itself, has a relatively high thermal conductivity. (*Id.* at 10). Further, absolute pressure would need to be close to 0 for an inch-based product to obtain an R-value per inch as great as 30. (*Id.* at 12). Because no one had provided an estimate for the absolute pressure in Insultex's cells, Dr. Yarborough declared that it could not be assumed that the R-value claimed could, in fact, be achieved. (*Id.*) At best, he reasoned Insultex's projected R-values are 0.24 or 0.36. (*Id.* at 11).

As to stacking, he stated, that "A stack of [Insultex] increases the total R-value being measured and reduces the heat flux and corresponding voltage to a level that can be directly measured." (*Id.* at 17). "The mathematical procedure for obtaining the R-value for a single thin layer of material from testing of stacks of the material has been published by the [heat flow meter apparatus'] manufacturer. The mathematics is easily verified." (*Id.*) (citing J198). Later in his report, he reiterated that "[t]he use of a stack of insulations to determine the R-value for a very small resistance is consistent with ASTM C518" and stacking was "done to provide thickness, temperature difference, and thermal resistance inside the requirements [of] C518." (*Id.* at 25).

Also provided to the Court was a copy of Dr. Yarborough's deposition. (Docket No. 200). Therein, Dr. Yarborough characterized Insultex as a hybrid insulation with some closed cell regions along with some other supporting materials. (*Id.* at 3-4). He cautioned that while a C518 apparatus could be used to test superinsulations, "special care has to be taken because of the extremely high resistance." (*Id.* at 6). A superinsulation can have an R-value of 25 per inch. (*Id.*) Superinsulations have been on the market since the 1980s. (*Id.* at 7). But, he decided that Insultex was not a superinsulation and could not be said to have an absolute vacuum because no testing exists that reports anything qualitative from which one could derive that conclusion. (*Id.* at 35).

With regard to the C518 Standards, it was his opinion that “[i]f you want to claim the precision claimed by C518, which is 5 percent . . . then you’ve got to be inside of *all* those parameters.” (*Id.* at 13) (emphasis added). He then agreed that Test 1 was outside of the parameters. (*Id.* at 14). Nevertheless, it was his opinion that the results were valid because the temperature differential ensured that the transducers were not saturated. (*Id.*) As to stacking, he further explicated that because stacking and the sandwich method were based on good thermal knowledge and basic heat transfer principles, using them was within the spirit of the C518 Standards. (*Id.* at 37).

As to BRC’s testing, Dr. Yarborough testified in discovery that the true value of the air gaps could only be calculated if BRC’s testing apparatus was taken apart and he knew the actual emittance of the plates.²⁰ (*Id.* at 23). Thus, he could not state with a reasonable degree of professional certainty that the R-value of the air space was, in fact, the 2.9 that he had claimed it was. (*Id.* at 23, 27). As previously stated, the Court also reviewed the fifty exhibits attached to Docket Nos. 203, 204. They included handbooks, manuals, journals, articles, sections of the Code of Federal Regulations, other testing standards, and the instructions of Insultex. (Docket No. 203-04). They add little to this Court’s analysis, as Dr. Yarborough only made passing reference to same. (Docket Nos. 201-02).²¹

III. DISCUSSION

A. Alleged Waiver of Daubert Challenge

²⁰ The FTC did not seek the type of examination necessary to obtain the true value of the air gaps. (Docket Nos. 201-02). Indeed, it did not even approach BRC about the possibility of taking apart its apparatus. (*Id.*)

²¹ Experts can rely on learned treatises in reaching their opinions. See *Orner v. Nat'l Beef Packaging Co., LLC*, No. 4:13-cv-0837, 2015 WL 8334544, at *9 (M.D. Pa. Dec. 9, 2015). But, Dr. Yarborough did not specifically identify the information upon which he was relying. Nor did he show how the testing he supervised and analyzed was supported by such authority.

The Court first turns to the FTC’s argument that IDI’s *Daubert* motion is untimely. (Docket No. 209 at 1-3). The FTC maintains that IDI waived its *Daubert* objection because it failed to file its motion before December 4, 2018 and failed to object to the FTC’s proffer relating to Dr. Yarborough. (Docket Nos. 101; 209 at 2-3). IDI counters that it could not have anticipated that the FTC would fail to elicit key testimony from its expert. (Docket No. 211 at 2).

Pursuant to Rule 16 of the Federal Rules of Civil Procedure, courts are granted the authority to establish pretrial deadlines, including for the filing of *Daubert* motions and motions *in limine*. *See FED. R. Civ. P. 16(b)*. It is within a trial court’s discretion pursuant to *FED. R. Civ. P. 6(b)*, 16(b) to enforce its own orders. *See Taylor v. Shields*, 744 F. App’x 83, 87 (3d Cir. 2018). Rule 16(b)(4) provides that deadlines set by the court in a pretrial order may be extended only for good cause shown. *See FED. R. Civ. P. 16(b)(4)*. To establish good cause, a party must show that it acted diligently but “carelessness, or attorney error, which might constitute ‘excusable neglect’ under Rule 6(b), is insufficient to constitute ‘good cause’ under Rule 16(b).” *Carnegie Mellon Univ. v. Marvell Tech. Grp, Ltd.*, Civ. Act. No. 09-290, 2012 WL 6562221, at *9 (W.D. Pa. Dec. 15, 2012) (quoting *Graham v. Progressive Direct Ins. Co.*, 271 F.R.D. 112, 121 (W.D. Pa. Sept. 15, 2010)). If a party fails to adhere to a deadline set in the pretrial order, the court may enter “any just orders,” and impose any of the sanctions listed in Federal Rule of Civil Procedure 37(b)(2)(A)(ii)-(vii), which include prohibiting a disobedient party from opposing a claim or defense, or introducing designated matters into evidence or striking pleadings. *Id.* (citing *FED. R. Civ. P. 16(f)*).

A party may waive an objection by failing to raise it in accordance with the deadlines set by the court. *Id.*; *see FED. R. EVID. 103* (providing “A party may claim error in a ruling to admit or exclude evidence only if the error affects a substantial right of the party and: (1) if the ruling

admits evidence, a party, on the record: (A) timely objects or moves to strike; and (B) states the specific ground, unless it was apparent from the context”); *Leonard v. Stemtech Int’l Inc.*, 834 F.3d 376, 400-01 (3d Cir. 2016). Such a failure to raise an objection can have adverse consequences on a party’s ability to contest certain alleged trial errors on appeal. See *Leonard*, 834 F.3d at 400-01 (explaining “[w]here, however, a party failed to object to the admission of evidence before the District Court, we deem that objection waived on appeal”); *Waldorf v. Shuta*, 142 F.3d 601, 629 (3d Cir. 1998) (stating “it is clear that a party who fails to object to errors at trial waives the right to complain about them following trial”). Yet, courts have also recognized that this general waiver rule should not trump its gatekeeper function. *Carnegie Mellon Univ.*, 2012 WL 6562221, at *9 (citing *Daddio v. A.I. DuPont Hosp. for Children of Nemours Found.*, 650 F. Supp. 2d 387, 402 (E.D. Pa. 2009)). To this end, the Court of Appeals for the Tenth Circuit affirmed a district court’s grant of a motion to strike after the close of evidence. *Alfred v. Caterpillar, Inc.*, 262 F.3d 1083, 1087 (10th Cir. 2001); contra *Quiet Tech. DC-8 Inc. v. Hurel-Dubois UK Ltd.*, 326 F.3d 1333 (11th Cir. 2003) (denying a *Daubert* motion on the merits on the sixth day of trial).

Like the court in *Daddio*, this Court finds it appropriate to consider IDI’s *Daubert* motion given its role as gatekeeper to scrutinize proffered expert testimony. *Daddio*, 650 F. Supp. 2d at 402. Upon review, the Court also finds that IDI has sufficiently established “good cause.” Neither party disputes Dr. Yarbrough’s expertise including the fact that he is well versed in C518 testing having served on the Committee that established the C518 Standards, and that his laboratory is proficient in same.²² (Docket Nos. 186; 217). While the FTC cries “sandbagging”, Dr. Yarborough acknowledged as he began his testimony that R&D’s testing parameters were

²² Dr. Yarborough testified that R&D does twenty to thirty measurements a week. (Docket No. 201 at 30). Given that R&D has seven heat flow meters, (*id.*), but only three are C518 apparatuses, (Docket No. 200 at 8), the record is unclear as to how many of said measurements were performed on C518 apparatuses. In addition, there was no testimony that the apparatus that was used in this instance was repeatedly used for similar testing.

going to be central to this case. (Docket No. 201 at 73, 94). The FTC, however, rested without asking the questions and securing the answers necessary to establish reliability and fit. (Docket Nos. 201; 202). At that moment, IDI properly recognized the potential for a *Daubert* challenge. It could not possibly have anticipated that the FTC would fail to elicit the most basic testimony from its key expert. It also bears mentioning that in the context of a bench trial, other courts have found that it is “the better course” “to ‘hear the testimony. . . and continue to sustain objections when appropriate.’” *Par Pharmaceutical, Inc. v. Hospira, Inc.*, Civ. Act. No. 17-944, 2019 WL 2571165, at * 2 (D. Del. June 21, 2019) (quoting *Easley v. Anheuser-Busch, Inc.*, 758 F.2d 251, 258 (8th Cir. 1985)). For these reasons, the Court overrules the FTC’s objection that IDI’s *Daubert* argument has been waived and will now address the parties’ positions on the substantive issues.

B. Challenge to Expert’s Reliability and Fit

In moving to exclude Dr. Yarborough’s R-value opinion, IDI challenges the reliability and fit of Dr. Yarborough’s testimony. (Docket Nos. 207-08; 210). As to reliability, IDI claims that (1) Insultex contains thermal bridges parallel to the direction of heat flow, which can negatively affect C518 testing results; (2) R&D’s testing apparatus was calibrated with a very dissimilar material from Insultex; (3) R&D performed tests that were not in compliance with C518 Standards; (4) Dr. Yarborough assumed but never calculated the actual R-value of the air gaps in BRC’s testing; and (5) Dr. Yarbrough failed to describe the software R&D used, testify that it was an accredited lab for the tests it performed, opine that the tests R&D conducted yielded scientifically reliable results, and that he held his opinion to a reasonable degree of scientific certainty. (Docket Nos. 208; 211). Not surprisingly, the FTC disagrees. (Docket Nos. 209; 212).

At the outset in rendering its decision, the Court treats Dr. Yarborough as any other testifying witness in a bench trial²³ determining whether his testimony credibly supports the FTC’s theory of the case.²⁴ See *In re Unisys Savings Plan Litig.*, 173 F.3d 145, 158 (3d Cir. 1999) (explaining “[w]hen the role of the gatekeeper to admit or exclude evidence (the judge) and the role of the factfinder to assess and weigh the evidence that was admitted (the jury) are one and the same, the judge who becomes the factfinder as well as the gatekeeper must be given great deference by this Court, and, as we note below, should not be required to waste judicial time”); *Wesley v. Grigorievna*, Civ. Act. No. 16-1004, 2016 WL 4493691, at *8 n.8 (W.D. Pa. Aug. 26, 2016); *Pritchard v. Dow Agro Scis.*, 705 F. Supp. 2d 47, 482-831 (W.D. Pa. 2010). The Court also notes that it considered the entire trial record as well as the additional evidence that the FTC submitted to advance its position after it rested. See *Quiet Tech. DC-8, Inc.*, 326 F.3d at 1338 (on the sixth day of trial after hearing argument on the “motion *in limine*, the district court invited the parties to submit pertinent publications and other such materials in support of their positions”). There is, however, one caveat. The parties agreed at the Pretrial Conference that all laboratory reports other than those explained by an expert would be introduced solely for the issue of notice.²⁵ (Docket No. 201 at 19-20). Indeed, when moving for the admission of J1 through J242, the FTC

²³ See *supra* note 2.

²⁴ A sister court in this Circuit recently wrote,

When making credibility determinations regarding the testimony of witnesses, a district court considers factors including variations in demeanor and tone of voice, . . . basis of knowledge, outside influence, bias, and extent to which testimony is self-serving, . . . evidentiary support for testimony, . . . and whether testimony is coherent, plausible, and internally consistent.

Finneman v. SEPTA, 308 F. Supp. 3d 855, 858 (E.D. Pa. 2018) (internal citations and quotations omitted). Similarly, the Third Circuit’s Model Jury Instructions guides that “[i]n deciding whether to accept or rely upon the opinion of [name of witness], you may consider any bias that [name of witness] may have, including any bias that may arise from evidence that [name of witness] has been or will be paid for reviewing the case and testifying [or from evidence that [name of witness] testifies regularly and makes a large portion of [his/her] income from testifying in court].” *Third Circuit Model Civil Jury Instruction 2.2*.

²⁵ It should be noted that some of the reports that are part of the joint exhibits were prepared by IDI’s competitors. See (J158).

stated that in accordance with “the Court’s prior ruling with respect to tests being offered without a witness who has personal knowledge of the tests or not having those specific tests opined on by an expert, that they only come in for notice.”²⁶ (*Id.* at 19-20). As this Court insinuated to counsel at the Pretrial Conference, the problem with the test reports of other laboratories being used substantively is that nothing is known about the operator, the device calibration, the operator’s methodology, the operator’s knowledge of the C518 Standards or thermal principles, the error rates, how the results were obtained, etc. (*Pretrial Conference Transcript* 7/23/19 at 25). Consequently, the Court cannot consider everything contained in these reports “lock, stock[,] and barrel.” (*Id.*) In response to the Court’s concerns at the Pretrial Conference, the FTC assured the Court that, “We are going to have Dr. Yarbrough walk the [C]ourt through [the] standard ASTM C518 test and you’ll be able to, based on the actual report, see whether they followed the method or not.” (*Id.*) The problem now is that the parties dispute whether the FTC did so.

Federal Rule of Evidence 702, which memorializes the Supreme Court’s landmark case, *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, provides the basic framework for the admissibility of expert testimony:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

²⁶ While the objection was only raised as to certain disputed exhibits at the Pretrial Conference, it is clear that there was a general agreement that the parties would not be using laboratory reports for scientific purposes unless it had a witness with personal knowledge of the tests to testify as to them or an expert who would speak to them. (Docket No. 191; *Pretrial Conference Transcript* 10/29/19).

FED. R. EVID. 702. “Rule 702 embodies three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability, and fit.” *Karlo v. Pittsburgh Glass Works, LLC*, 849 F.3d 61, 80 (3d Cir. 2017) (quoting *Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000)). To this end, a district court is expected to act as a gatekeeper preventing opinion testimony from reaching the factfinder that does not meet these three requirements. *Pineda v. Ford Motor Co.*, 520 F.3d 237, 243 (3d Cir. 2008). This Rule applies with equal force in the context of a bench trial as “an intelligent evaluation of [the] facts is often difficult or impossible without the application of some scientific, technical, or other specialized knowledge.” *UGI Sunbury LLC v. A Permanent Easement for 1.7575 Acres*, __ F.3d __, Docket Nos. 18-3126, 18-3127, 2020 WL 628540, at *1, *4 (3d Cir. Feb. 11, 2020); *Stecyk v. Bell Helicopter Textron, Inc.*, 295 F.3d 408, 415 n.3 (3d Cir. 2002); *United States v. Mills*, Crim. No. 17-122, 2019 WL 2464782, at 2 (W.D. Pa. June 13, 2019). The burden falls on the proponent of evidence to show that it is relevant and admissible and in doing so, the proponent can rely on all the evidence before the court.²⁷ *United States v. Mitchell*, 365 F.3d 215, 244 (3d Cir. 2004); *Elcock*, 233 F.3d 734.

As to the first prong, the parties have stipulated to Dr. Yarbrough’s qualifications and as noted already, agree that his knowledge, skill, and training qualify him as an expert under *Daubert*. (Docket Nos. 186; 217 at 19). Although Dr. Yarborough satisfies the first prong under *Daubert*, he does not satisfy the second or third prongs. The Court turns to those prongs below.

“[T]he reliability analysis applies to all aspects of an expert’s testimony.” *Heller v. Shaw Indus., Inc.*, 167 F.3d 146, 155 (3d Cir. 1999). An expert’s opinion is reliable when it is based on “good grounds,” *In re Paoli R.R. Yard PCB Litig. (Paoli II)*, 35 F.3d 717, 744 (3d Cir. 1994), i.e., it is “based on the methods and procedures of science rather than on [a] subjective belief or

²⁷ The FTC, however, conceded at oral argument that the Court could only consider the trial record. (Docket No. 217 at 25).

unsupported speculation,” *Furlan v. Schindler Elevator Corp.*, 516 F. App’x 201, 205 (3d Cir. 2013) (internal citation and quotation omitted). The focus is not upon the expert’s conclusions, indeed the test for reliability is not one of correctness, but upon the expert’s methodology. *Paoli II*, 35 F.3d at 744, 746. The issue is whether the evidence should be excluded because “the flaw is large enough that the expert lacks ‘good grounds’ for his or her conclusions.” *Id.* The Court of Appeals for the Third Circuit in *Paoli II*, enumerated eight factors that a district court may examine when determining reliability, yet they “are neither exhaustive nor applicable in every case.” *Kannankeril v. Terminix Int’l., Inc.*, 128 F.3d 802, 806-07 (3d Cir. 1997) (citing *Paoli II*, 35 F.3d at 744). The factors include:

(1) whether a method consists of a testable hypothesis; (2) whether the method has been subject to peer review; (3) the known or potential rate of error; (4) the existence and maintenance of standards controlling the technique’s operation; (5) whether the method is generally accepted; (6) the relationship of the technique to methods which have been established to be reliable; (7) the qualifications of the expert witness testifying based on the methodology; and (8) the non-judicial uses to which the method has been put.

Paoli II, 35 F.3d at 742 n.8; see *UGI Sunbury LLC*, 2020 WL 628540, at *5. Whether an expert expressed an opinion within a reasonable degree of scientific certainty is another benchmark of reliability. *R.D. v. Shohola, Inc.*, Civ. Act. No. 16-cv-1056, 2019 WL 6053223, at *8 (M.D. Pa. Nov. 15, 2019) (citing *Pritchard*, 705 F. Supp. 2d at 493 n.18).²⁸ To this end,

[o]f course, an expert need not use “the talismanic phrase that their opinion is given to ‘a reasonable degree of medical certainty,’ because ‘[c]are must be taken . . . to see that the incantation does not become a semantic trap and the failure to voice it is not used as a basis for exclusion without analysis of the testimony itself.’” *Holbrook v. Lykes Bros. S.S. Co.*, 80 F.3d 777, 785 (3d Cir. 1996) (quoting *Schulz v. Celotex Corp.*, 942 F.2d 204, 208 (3d Cir. 1991)). In that regard,

while the particular phrase used should not be dispositive, it may indicate the level of confidence the expert has in the expressed opinion. Perhaps

²⁸ While the U.S. Court of Appeals for the Third Circuit does not require that opinions be held with a reasonable degree of scientific certainty to be admissible, the Third Circuit has recognized that the level of certainty should coincide with what is accepted practice in the field. *U.S. v. Mornan*, 413 F.3d 372, 380-81 (3d Cir. 2005).

nothing is absolutely certain in the field of medicine, but the intent of the law is that if a physician cannot form an opinion with sufficient certainty so as to make a medical judgment, neither can a jury use that information to reach a decision.

Id. (quoting *Schulz*, 942 F.2d at 209). The Third Circuit thus explained that “[s]ituations in which the failure to qualify the opinion have resulted in exclusion are typically those in which the expert testimony is speculative, using such language as possibility.” *Id.* (quoting *Schulz*, 942 F.2d at 208).

United States v. Donahue, Crim. No. 3:11-CR-0033, 2015 WL 1786174, at *3 (M.D. Pa. Apr. 20, 2015). Given the potential impact of the remedies being sought by the FTC, e.g., injunctive relief, recession or reformation of contracts, restitution, the refund of moneys paid, and disgorgement, one would expect an expert to provide definite rather than conclusory testimony. *See* (Docket No. 1). Further, an expert with Dr. Yarbrough’s qualifications should have been prepared to do so in keeping with *Daubert* and its progeny.

“[T]here are no bright-line rules requiring that an expert undertake a specific type of testing in a particular case.” *Trask v. Olin Corp.*, Civ. Act. No. 12-340, 2016 WL 1181428, at *11 (W.D. Pa. Mar. 28, 2016). That said, however, the “use of standard techniques bolster[s] the inference of reliability, [while] nonstandard techniques need to be well-explained.”²⁹ *In re Zoloft (Sertraline Hydrochloride) Products Liability Litig.*, 858 F.3d 787, 797 (3d Cir. 2017) (citing *Paoli II*, 35 F.3d at 758) (emphasis added). This is because “not all specialized knowledge can claim the label of reliable science.” *UGI Sunbury LLC*, 2020 WL 628540, at *1.

The C518 Standards are incorporated by reference in the FTC’s R-value Rule and as such, are the prevailing standard in the industry. 16 C.F.R. § 460.5(e)(1)(ii); (Docket No. 201 at 33, 79).

²⁹ “When the methodology is sound, and the evidence relied upon sufficiently related to the case at hand, disputes about the degree of relevance or accuracy (above this minimum threshold) may go to the testimony’s weight, but not its admissibility.” *i4i Ltd. P’ship v. Microsoft Corp.*, 598 F.3d 831, 852 (Fed. Cir. 2010), *aff’d*, 564 U.S. 91 (2011); *Karlo*, 849 F.3d at 83 (quoting *Daubert*, 509 U.S. at 596) (explaining “[v]igorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence”).

The Standards caution, however, that “[s]tandardization of this test method is not intended to restrict in any way the future development of improved or new methods or procedures by research workers.” (J1 § 1.11; J2 § 1.11).³⁰ Nonetheless, pursuant to *In re Zoloft (Sertraline Hydrochloride) Products Liability Litigation*, any nonstandard techniques, i.e., ones that deviate from the R-value Rule or the C518 Standards, need to be well explained. 858 F.3d at 797 (3d Cir. 2017) (citing *Paoli II*, 35 F.3d at 758). Indeed, Dr. Yarborough himself acknowledged the importance of laboratory compliance with the C518 Standards when he wrote,

A heat-flow meter operated *in strict compliance* with ASTM C518 is expected to produce results with imprecision of better than 3% at the 95% confidence level. . . . A heat-flow meter can provide results for situations where all the strict requirements of the standard are not met[sic]. In such cases, the imprecision is likely to be greater than the 3% mentioned above.

(Docket No. 200-4 at 3) (emphasis added). Quizzically, Dr. Yarborough never opined as to whether testing results with an imprecision rate higher than 3% would be considered reliable within the scientific community. With this backdrop, the Court addresses the parties’ arguments relating to reliability.

IDI first argues that Dr. Yarborough failed to explain how C518 testing could yield reliable results when the C518 Standards warn that using the apparatus where the material has thermal bridges may render the results unreliable. (Docket Nos. 208; 211). While Dr. Yarborough admitted that the C518 Standards state as much, he testified that the structure of Insultex negated any risk of thermal bridging and that the rule only applies in the context of superinsulations. (Docket No. 201 at 152-53, 185). As explained later, Dr. Yarborough has not stated good grounds for eliminating the possibility that Insultex is a superinsulation.

³⁰ J1 was approved in 2015, and J2 was approved in 2010. (Docket No. 201 at 77).

In formulating his expert opinion, Dr. Yarborough relied on testing that was performed using nonstandard techniques. Because Dr. Yarborough provided little to no explanation for R&D’s deviations, the Court cannot find that there were reasonable grounds for his opinion. With regard to calibration, R&D ignored the plain language of the C518 Standards when it used a one-inch fiberglass board to calibrate its C518 apparatus. (Docket No. 201 at 72-73, 94, 154). The C518 Standards require that “similar types of materials, of similar *thermal conductances*, at similar *thicknesses*, mean temperatures, and temperature gradients, as . . . the test specimens” be used, (J1 § 1.2; J2 § 1.2) (emphasis added),³¹ and that “[i]f tests are to be conducted at thicknesses other than the calibrated thickness [which they were here], [the tester must] make a thorough study of the error of the heat flow meter apparatus at other thicknesses.” (J1 § 6.5.4; *see* J2 § 6.5.4). While Dr. Yarborough agreed that Insultex has dissimilar thermal properties to a fiberglass board, that R&D tested the product at different thicknesses, and that R&D’s apparatus was only “checked” monthly, he nevertheless concluded that the calibration of R&D’s apparatus was valid because thickness was the only variable that mattered and R&D’s testing methodology minimized the risk of any edge loss. (Docket No. 201 at 89, 154-55). It is noteworthy that his opinion lies in stark contrast to that found in his initial report in which he emphasized the importance of both thermal characteristics and thickness when calibrating. (J212 at 20; Docket No. 201 at 88-89, 153-55).

In an attempt to cure the gaps in its key expert’s testimony, the FTC, citing J241 and J161, argues that other laboratories when testing Insultex have calibrated their C518 apparatus using “similar” material. (Docket No. 209 at 11). In violation of this Court’s Order and the prior agreement of the parties, the FTC seeks to rely on the substance of these reports without having elicited the supporting testimony. *See (id.)* Equally problematic is the fact that Dr. Yarbrough

³¹ Later in the C518 Standards it reads, “the apparatus shall be calibrated with materials having similar thermal characteristics and thickness as the materials to be evaluated.” (J1 § 6.1).

failed to testify that such practice was generally accepted in the scientific community, would yield reliable results, was peer reviewed, what the potential rate of error was, and whether there was a study of error. *See UGI Sunbury LLC, 2020 WL 628540*, at *5 (finding expert reports unreliable where “they lack any suggestion that the ‘damaged goods theory’ has been subject to peer review or enjoys general acceptance. Nor do they contain any analysis of a known or potential rate of error. Or any standards controlling the theory’s application”). On this basis alone, Dr. Yarborough’s R-value opinion premised on R&D’s results could be said to lack good grounds. Although the Court will address the issues surrounding the methodology of R&D’s testing, it bears mentioning that if the apparatus was not properly calibrated, all of R&D’s results would appear invalid. So too would Dr. Yarborough’s conclusions to the extent he based them on same.

None of the tests R&D performed complied with the R-value Rule or the C518 Standards. (Docket No. 201 at 146-150). Moreover, the reliability of R&D’s three test methods is undermined by the lack of testimony explaining the science permitting each modification. In this Court’s estimation, Dr. Yarborough has not established that they are based on heat transfer principles. Although Dr. Yarborough attempted to explain his thought process through a series of demonstrative exhibits, he never linked those demonstratives pertaining to the science of heat transfer to the testing R&D performed. (Docket No. 201). Instead, he made conclusory statements upon which the Court cannot rely. Further, there is no evidence in the record describing whether the modifications have been subject to peer review; the known or potential rate of error for each modification; the existence and maintenance of standards controlling the modification; whether the modifications are generally accepted; and the relationship of the technique to methods established to be reliable. Indeed, Dr. Yarborough testified that he, “[didn’t] know any details of what other labs might be doing in terms of modifications.” (*Id.* at 143). Hence, the Court cannot

take Dr. Yarborough at his word that his results are valid. (*Id.* at 130); *see Schneider ex rel. Estate of Schneider*, 320 F. 3d 396, 404 (3d Cir. 2013) (providing testimony is reliable where it is “based on the methods and procedures of science rather than on subjective belief or unsupported speculation; the expert must have ‘good grounds’ for his or her belief. In sum, *Daubert* holds that an inquiry into the reliability of scientific evidence under Rule 702 requires a determination as to its scientific validity”) (internal citation and quotation omitted).

While the FTC argues ardently that the stacking and sandwich methods are permissible techniques given the fact that other laboratories have used them and insulation is additive, it has failed to explain away the express language of the C518 Standards and failed to produce testimony supporting its claim that these methods are permissible. (Docket No. 209 at 6 n.9, 12) (citing J2; J17; J161; J198; J212; J213; J242; Docket No. 201; 203-17).³² In fact, the C518 Standards do not allow for stacking of more than two materials and permit sandwiching only when “a radiation blocking septum” is used. (J.2 ¶ A.1.8.2; Docket No. 202). Having failed to produce what the Court believes to be necessary testimony under *Daubert*, the FTC asks the Court to assume expert opinion exists when it has not actually been introduced. (Docket No. 201 at 146-49). The same can be said about Dr. Yarborough’s opinion concerning temperature differential. His testing does not comport with the parameters he deemed authoritative. Hence, the record does not support good scientific grounds for admissibility. *See (id.)* He also provided no explanation for his conclusion that this modification had only a negligible effect on precision. (*Id.* at 146). It bears mentioning at this juncture that Dr. Yarborough is an expert in the field, was on the drafting Committee for the C518 Standards, knew that R&D’s methodology’s reliability was in question, and yet failed to provide an explanation as to why R&D did what it did. Although the FTC attempts

³² The FTC also references the depositions of Dr. Garlotta, Dr. Mavrokefalos, and PJLA’s 30(b)(6) deposition. (Docket No. 209). (Deposition designations were made at Docket Nos. 183, 184.)

to save R&D's testing results by asserting that Dr. Yarborough had used this temperature differential before, that does nothing to alleviate the Court's concern that this procedure was not standard practice in the community or may not yield reliable results. (Docket No. 209 at 15) (citing J62; R&D Dep. Tr.); *see In re Zoloft (Sertraline Hydrochloride) Prods. Liab. Litig.*, 858 F.3d at 797.

The FTC argues that despite these deficiencies R&D's test results are valid because Dr. Yarborough had a testable hypothesis and other laboratories reached the same conclusion, i.e., that IDI overstated Insultex's R-values. (Docket No. 209 at 16-17). Outcome, however, is not determinative as to the issue of scientific reliability. *See Furlan*, 516 F. App'x at 205 (explaining good grounds requires that the opinion be "based on the methods and procedures of science rather than on [a] subjective belief or unsupported speculation") (internal citation and quotation omitted). Under *Daubert*, a scientist must design an experiment to test a hypothesis, conduct that test, observe the results, and draw any conclusions therefrom. Any laboratory could reach the same conclusion, but all may not have good grounds to do so under *Daubert*.

Dr. Yarborough also contended that IDI's claims were not even theoretically possible. (Docket No. 201 at 134-38, 138, 151). He did so despite acknowledging that Insultex contained evacuated cells that were essentially vacuums. (*Id.*) He previously had concluded that Insultex could not be a superinsulation because it did not have an absolute vacuum but formulated his opinion without measuring the actual pressure inside the cells. (Docket No. 200 at 35). Thus, Dr. Yarborough's theory is speculative at best and does not meet the standard for reliability, under *Daubert* and its progeny.

Although Dr. Yarborough criticized BRC's testing configuration for including $\frac{3}{4}$ " air gaps, he acknowledged that he did not know the emissivity of the plates or the value of the air gap but

instead hypothetically calculated them based on the material of the plates. (*Id.* at 169-70, 175). The FTC argues that this calculation is reliable because his estimation is consistent with other evidence in the record, but there is nothing in the record demonstrating that the other laboratories followed generally accepted practice.³³ (J214; J233; Docket No. 201 at 158-61, 183). Finally, although not dispositive, it is noteworthy that Dr. Yarborough never expressed his confidence in the accuracy of his opinion by testifying with a reasonable degree of scientific certainty. *See* (Docket No. 200-4 at 23, 27).

Dr. Yarbrough's testimony also fails to fit the case. The "fit" element "goes primarily to relevance." *Daubert*, 509 U.S. at 591. To be admissible, the expert testimony must assist the trier of fact in resolving a factual dispute. *Id.* With respect to the "fit" prong, the expert must "apply his experience reliably to the facts; his opinions must be well-reasoned, grounded in his experience, and not speculative." *Sargent v. Cmmw. of Pa.*, Civ. Act. No. 13-730, 2015 WL 6447742, at *1 (M.D. Pa. Oct. 26, 2015) (quoting *Roberson v. City of Phila.*, Civ. Act. No. 99-3574, 2001 WL 210294, at *4 (E.D. Pa. Mar. 1, 2001)). The Court acknowledges that the standard for analyzing fit is "not that high." *Premier Comp Sols. LLC v. UPMC*, Civ. Act. No. 15-703, 2019 WL 480480, at *3 (W.D. Pa. Feb. 7, 2019) (citing *Paoli II*, 35 F.3d at 745). Yet, a court must "examine the expert's conclusions in order to determine whether they could reliably follow from the facts known to the expert and methodology used." *Heller*, 167 F.3d at 153. "[W]hen a trial judge analyzes whether an expert's data is of a type reasonably relied on by experts in the field, he or she should assess whether there are good grounds to rely on this data to draw the

³³ To the extent that the FTC relies on the reports and deposition designations of Dr. Jonathan Malen and Dr. Mavrokefalos, the Court reminds the parties that it is considering a challenge to Dr. Yarbrough who did not testify that he considered their opinions, reviewed their testing procedures and the like, or met with them to learn more about what they thought. Further, he did not describe how their testing methodology comported with that of R&D's. (Docket Nos. 201-02)

conclusion reached by the expert.” *Paoli II*, 35 F.3d at 749. “[D]ue to the inherently closed factual universe created by the Federal Rules of Evidence and the partisan decisions of litigants in selecting experts, it is desirable to have expert witnesses express their degree of confidence accurately.” *United States v. Ford*, 481 F.3d 215, 221 n.7 (3d Cir. 2007). Further, “[b]ecause the parties are apt to select experts based on their ability to provide highly favorable testimony, it is preferable that, where there is cause for doubt as to a particular opinion, the experts make clear any uncertainty.” *Id.*

For the reasons stated in the preceding discussion on reliability, it is unclear from Dr. Yarborough’s testimony, how closely his conclusions are connected with the data in this case given that his opinions are founded on testing that deviates from the R-value Rule and the C518 Standards. Further complicating the matter is the fact that Dr. Yarbrough testified that Insultex is an “unusual specimen” that can only be properly tested at a thickness of more than two specimens. (Docket No. 201 at 78, 109-10). Thus, it appears that the C518 Standards first promulgated in 1963 may not have even contemplated how to test a product like Insultex.³⁴ (*Id.* at 78). Accordingly, Dr. Yarborough’s opinion cannot be said to fit the case. The Court cautions, however, that it is by no means concluding that C518 testing cannot be used to test Insultex, just that Dr. Yarborough and the FTC did not show that it can in this instance.³⁵

The Court also recognizes its discretion under *Daubert*. See *In re Zoloft (Sertraline Hydrochloride) Products Liability Litig.*, 858 F.3d at 800. Given the fact that Dr. Yarborough

³⁴ See *supra* note 30.

³⁵ The FTC relies on *Schneider ex rel. Estate of Schneider v. Fried*, 320 F.3d 396, 399-400 (3d Cir. 2003), which the Court finds distinguishable. (Docket No. 217 at 13). Unlike the experts in *Schneider*, Dr. Yarborough has not explained how his expertise, wealth of experience, or the relevant scientific literature informed R&D’s modifications and deviations from the R-value Rule and the C518 Standards. See *id.* Additionally, unlike *Schneider*, there was scant testimony about his experience in using these modifications. While Dr. Yarborough gave the Court pieces of his thought process, he never pulled it all together despite being given every opportunity to explain the basis for his opinion and why he deviated from the FTC’s own standards. Further, *Schneider* is a medical malpractice case and underpinning the decision is Pennsylvania law. See *id.*

deviated from the C518 Standards, the same standards that he deemed sacrosanct, vacillated in his opinion from one setting to the next, and then failed to explain how R&D's testing was consistent with general scientific principles, from the Court's perspective, he is not entirely credible. Additionally, although he knew from the outset of the trial that his laboratory's testing was going to be at issue, he provided nothing more than cursory answers as to why it deviated from the applicable standards. An expert with his credentials should have been prepared to provide some explanation (let alone a compelling one) for any deviations. Lastly, in this Court's ruling on IDI's Motion to Disqualify, the Court made it known that Dr. Yarborough's credibility was going to be an issue given his previous work for IDI, but the FTC by way of its questioning did little to assuage the Court's concerns. (Docket No. 93).

C. Request to Reopen the FTC's Case-in-Chief³⁶

This Court now turns to the issue of whether the FTC should have an opportunity to reopen its case-in-chief. Although the FTC asserts prejudice for not being permitted to reopen, it has never actually moved to do so. (Docket No. 202). Nonetheless, the Court of Appeals for the Third Circuit explained that prejudice is the standard to consider when deciding whether to reopen a case. *United States v. Trant*, 924 F.3d 89, 91 (3d Cir. 2019); *see also* FED. R. EVID. 611.

A critical factor in evaluating prejudice is the timing of the motion to reopen . . . [If] the motion to reopen comes at a stage in the proceedings where the opposing party will have an opportunity to respond and attempt to rebut the evidence introduced after reopening, it is not nearly as likely to be prejudicial as when reopening is granted after all parties have rested, or even after the case has been submitted to the [finder of fact]. . . . In exercising its discretion, the court must also consider the *character of the testimony* and the *effect of the granting of the motion*. . . . The evidence proffered should be relevant, admissible, technically adequate, and helpful to the [factfinder] [in resolving the issue]. . . . Further, [t]he party moving to reopen should provide a *reasonable explanation* for failure to present the evidence [initially]. . . . [T]o properly exercise its discretion, the district court

³⁶ The Court set aside an entire week to hear this case despite a relatively heavy criminal caseload given that at the time of the trial listing, the United States District Court for the Western District of Pennsylvania had five judicial vacancies.

must evaluate the offered explanation and determine if it is both reasonable and adequate to explain why the government initially failed to introduce evidence that may have been essential to meeting its burden of proof.

United States v. Keyes, 214 F. App'x 145, 153 (3d Cir. 2007) (internal citations and quotations omitted) (emphasis added).

It was abundantly clear from the beginning of the trial that C518 testing methodology would be a central issue. (Docket No. 201 at 73, 94). Yet inexplicably, after watching its own expert become visibly distressed on cross-examination as his opinions were being undercut, the FTC rested. Even after being given months to develop an argument, the FTC has not made a proffer showing how it might cure the deficiencies in Dr. Yarborough's testimony and has not provided any explanation why it failed to elicit evidence that may have been essential to meeting its burden of proof, rather it simply desires a chance to cure "*whatever perceived flaws* Dr. Yarborough's trial testimony contained." (Docket No. 209 at 4) (emphasis added); *see Calhoun v. Yamaha Motor Corp., U.S.A.*, 350 F.3d 316 n.9 (3d Cir. 2003) (writing "[Rule] 702 'affirms the trial court's role as gatekeeper and provides some general standards that the trial court must use to assess the reliability and helpfulness of proffered expert testimony'").

The Court is troubled by the FTC's position. Since the inception of this action, which was filed in 2016, the FTC has had virtually unlimited resources. (Docket No. 1). Unlike IDI, it has had the assistance of at least two attorneys and a paralegal. Dr. Yarborough has been at its beck and call, available to formulate strategy, develop their case, and answer any questions that it might have. It has also had ample opportunity to consult with other experts and depose any of the other laboratories that tested Insultex. Yet, it neglected to develop even the most basic aspects of its case and has provided the Court with little to consider when determining whether it should reopen the matter. On the other hand, it is clear to the Court that IDI would be prejudiced if the FTC were

permitted to recall Dr. Yarborough concerning some unknown testimony for an unknown amount of time. Moreover, IDI has made it known that it is in serious financial distress. (Docket No. 159).

This case is distinguishable from *United States v. Trant*, 924 F.3d 83, a criminal case, which the FTC asserts requires the Court to allow it to reopen its case-in-chief. In *Trant*, the United States Court of Appeals for the Third Circuit found that the district court did not abuse its discretion by granting the government's motion to reopen where the government had inadvertently rested its case without moving to admit an agreed upon stipulation and both parties agreed that the stipulation was admissible and had significant probative value. 924 F.3d at 90-91. Conversely, in the case at hand, the FTC seeks to relitigate its case-in-chief by obtaining new testimony from its expert relating to an issue that has been hotly contested throughout the trial.

Lastly, the Court stresses that it would be contrary to *Daubert*, for it to simply take the FTC at its word that IDI's claims concerning Insultex are a sham. The FTC, just like any other party, needs to prove its case. This is particularly true where, as here, the FTC is seeking variety of remedies including a permanent injunction. (Docket No. 1 ¶ 36).

V. CONCLUSION

For these reasons, IDI's Motion to Strike [196] and [207] is GRANTED.

s/Nora Barry Fischer
Nora Barry Fischer
Senior U.S. District Judge

Dated: February 14, 2020

cc/ecf: All counsel of record.